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THRYONOMYID RODENT FROM THE LATE MIOCENE  
NAMURUNGULE FORMATION, SAMBURU HILLS,  
NORTHERN KENYA

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**ABSTRACT** Thryonomyid rodent collected from Late Miocene Namurungule Formation is described. The specimen is represented by a fragmental mandible with  $dP_4$  or  $P_4$ ,  $M_1$ ,  $M_2$  and  $M_3$ . The tooth pattern with three transverse crest is fundamentally identical in each molar. Neither posterior arm of protoconid nor mesolophid is present in any molars. Absence of anteroconid is another important character of the present molars compared with the known species of *Paraphiomys* and *Paraulacodus*. This specimen is possibly assigned to *Paraphiomys* by the resemblance of tooth pattern, size and hypsodonty, but the specific determination is reserved in this paper. Additional materials are required to decide its definite taxonomic position. The occurrence of the present specimen suggests that *Paraphiomys* had survived up to Late Miocene in East Africa.

INTRODUCTION

The field survey of the Japan-Kenya expedition team headed by Dr. Hidemi Ishida was carried out in the area west of Baragoi, northern Kenya, in 1982. Many vertebrate fossils including hominoid were collected from the Namurungule Formation exposed in Samburu Hills, the western part of this area. The age of the Namurungule Formation is considered to be in the early part of the Late Miocene on the basis of the comparison of the faunal composition with other localities (Pickford *et al.*, 1984).

The rodent specimen described in this paper was found *in situ* at Site 22, of the Namurungule Formation. It is referable to Thryonomyidae by its molar pattern, but bears some interesting dental characters. Although its specific determination is reserved in this paper, it has a possibility of being a new species. Additional specimens in the collection of the next field season are expected to permit determination of its taxonomic position with greater confidence.

SYSTEMATIC ACCOUNTS

Order Rodentia Bowdich, 1821

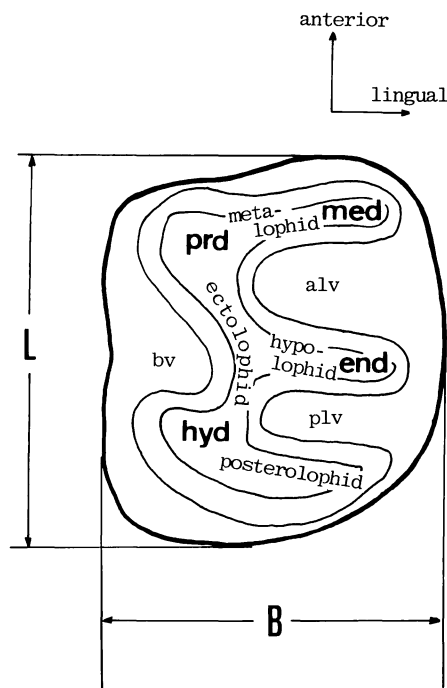
Superfamily Thryonomyoidea Wood, 1955

Family Thryonomyidae Pocock, 1922

Genus *Paraphiomys* Andrews, 1914

*Paraphiomys* sp.

(Fig. 2; Plate 1, fig. 1-3)



**Fig. 1.** Terminology and method of measurement of the molars. The following abbreviations are used:

*prd* = protoconid, *hyd* = hypoconid, *med* = metaconid, *end* = entoconid, *alv* = antero-lingual valley (taloid basin), *plv* = postero-lingual valley, *bv* = buccal valley, *L* = length of the crown, *B* = breadth of the crown.

**Material:** Left fragmental mandible with dP<sub>4</sub> or P<sub>4</sub>, M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub> (KNM-SH 10524).

**Locality:** Site 22 (loc. SH 22) in Samburu Hills, north of Maralal, Kenya.

**Age:** Late Miocene

**Description:**

The most anterior tooth is too fragmental to decide whether it is a dP<sub>4</sub> or P<sub>4</sub>, whereas other teeth are well preserved. In occlusal view, M<sub>1</sub> and M<sub>2</sub> have sub-quadrate outlines with round corners. M<sub>1</sub> and M<sub>2</sub> are approximately equal in size, but the latter is somewhat broader. The antero-lingual corner of M<sub>3</sub> is slightly damaged. The outline of M<sub>3</sub> is rounder than M<sub>1</sub> and M<sub>2</sub>, and slightly longer antero-posteriorly.

These molars with three transverse crests are fundamentally identical in tooth pattern. Protoconid, ectolophid and hypoconid connect these crests on the buccal side of the crown to form a W-pattern. All cusps are completely fused into these W-shaped crests. There are two lingual and one buccal valleys between these crests. The antero-lingual valley is wider than the postero-lingual one. Metalophid runs along the anterior margin of the crown at right angles to the long axis of the crown, whereas hypolophid is directed slightly postero-lingually. Posterolophid extends from

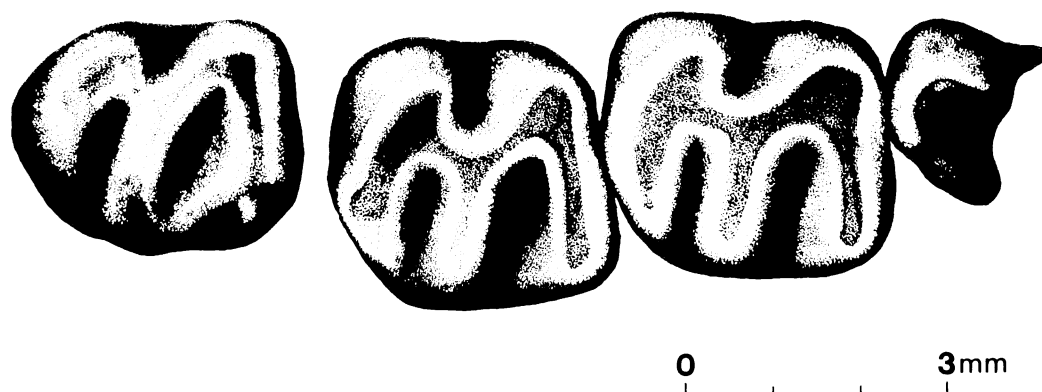


Fig. 2. *Paraphiomys* sp. from Samburu Hills (KNM-SH 10524). Occlusal view of left lower cheek teeth (fragmental dP<sub>4</sub> or P<sub>4</sub>, M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub>).

hypoconid along posterior margin of the crown, and its lingual end is directed slightly anteriorly. In general, metalophid is higher than hypolophid which slightly exceeds the posterolophid in height. Neither posterior arm of protoconid nor mesolophid is present. Anteroconid is also completely lacking.

The measurements are given as follows:

M <sub>1</sub>	Length:	3.4 mm	M <sub>2</sub>	L:	3.4	M <sub>3</sub>	L:	3.4
	Breadth:	3.0		B:	3.2		B:	2.8

#### Discussion:

The molar pattern of the present specimen is essentially coincident with that of *Paraphiomys* among the African Tertiary thryonomyids. *Paraphiomys* has three crested lower molars whose crowns are higher than those of *Phiomys*, a representative genus of *Phiomyidae*. The hypsodonty of the present specimen is similar to those of the African *Paraphiomys* and the Indian *Paraulacodus*, but is more advanced than that of *Phiomys*.

In the present specimen, the posterior arm of protoconid and the mesolophid are completely lacking. *Phiomyids* have both or one of these projections in the antero-lingual valley which are generally well-developed. In *Paraphiomys*, however, the posterior arm of protoconid is more reduced and the mesolophid is absent (in accordance with the terminology used by Wood, 1968). For instance, *Paraphiomys simonsi* from the Oligocene Fayum has no posterior arm of protoconid (Wood, 1968, fig. 5). Wood, however, stated that a very faint suggestion of posterior arm of protoconid was present only on M<sub>2</sub>. This projection is also weak or absent in the Miocene species such as *Paraphiomys pigotti* and *P. stromeri* (vide Lavocat, 1973). This is also true in the illustrations of *P. pigotti* by Andrews (1914), *Neosciuromys africanus* (= *P. pigotti*) by Stromer (1926), and *Apodector stromeri* (= *Paraphiomys stromeri*) by Hopwood (1929). The degree of the development of this projection is highly variable even in a single species of *Paraphiomys*, although the reductions of the posterior arm of protoconid and the mesolophid are general evolutionary trends of this group. Additionally, *Paraulacodus* from the Siwaliks lacks such a projection (Black, 1972).

The absence of anteroconid is an important character of the present specimen. The species of

*Paraphiomys*, such as *P. simonsi*, *P. pigotti*, *P. occidentalis* and *P. stromeri* usually have this small cusp on the anterior face of the protoconid (Stromer, 1926; Hopwood, 1929; Wood, 1968; Lavocat, 1961, 1973). Exceptionally, Andrews (1914) did not illustrate this cusp in his original description of *P. pigotti*. The anteroconid is also present on  $M_2$  of *Paraulacodus* (Black, 1972).

The present specimen is somewhat smaller than *P. pigotti*, *P. occidentalis*, and *P. simonsi* in size, but the differences among them are rather slight. On the other hand, *P. stromeri* is considerably smaller than the present specimen.

In regard to the proportion of each molar, the size of  $M_1$  approximates that of  $M_2$  in the present specimen. But *P. pigotti* has broader  $M_2$  than  $M_1$ . This tendency is also seen in *P. simonsi*, but is not so obvious in *P. stromeri*. Because there is a wide range of individual variation in size and proportion of each tooth, these differences can probably be attributed to individual variation.

The present specimen is possibly assigned to the genus *Paraphiomys* by the resemblance of the general tooth pattern, the size and the hypsodonty. The only essential difference from the known species of *Paraphiomys* is the absence of the anteroconid. Because of the scarcity of specimens, the specific determination of the present specimen is reserved.

In East Africa, *Paraphiomys* is recorded from the Early Miocene localities (Lavocat, 1973, 1978). Recently Shipman *et al.* (1981) reported the occurrence of *Paraphiomys* from the Middle Miocene Fort Ternan in Kenya. Outside of East Africa, it occurs from the Late Miocene Beni Mellal of Morocco (Lavocat, 1961, 1978). The present occurrence of *Paraphiomys* from Samburu Hills suggests that this genus had survived up to the Late Miocene in East Africa.

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## Explanation of Plate 1

*Paraphiomys* sp. from Samburu Hills (KNV-SH 10524). Left fragmental mandible with dP<sub>4</sub> or P<sub>4</sub> (badly damaged), M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub>.

**Fig. 1.** Occlusal view (×10).

**Fig. 2.** Lingual view (×10).

**Fig. 3.** Buccal view (×10).

